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**Project Narrative**

**North Dakota State University**

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**The Farm and Ranch Connection Project (FRC)**
**Project Narrative**

***Project Purpose*:** North Dakotans need technology to provide educational opportunities, access resources, and connect with other people with shared interests and concerns within their local areas and at their convenience.

North Dakota has 638,000 people scattered over 70,000 square miles. This low-density population means that people either drive hundreds of miles to access opportunities or they do without. Often, the choice is to do without, because of the time and dollar costs involved.

The Farm and Ranch Connection (FRC) project will improve the availability of educational programs and access to resources for people in rural North Dakota. They will share experiences and interact with others with similar interests and concerns, whether they live next door or a world away.

As the lead organization, the North Dakota State University (NDSU) Extension Service sees the Technology Opportunities Program as a way to further use technology to accomplish Extension's purpose--to create learning partnerships that help adults and youth enhance their lives and communities in an innovative way. The [extension] "program is uniquely suited to help introduce information-age technologies to rural areas where unfamiliarity and lack of experience with communication technology is a major barrier to its use" (Congress 23). Extension reaches people with the information and help they need to take charge of their lives.

The goals of this project are: (1) to establish a broadband infrastructure available to rural communities; (2) to demonstrate the value of such technology to isolated communities and rural residents; (3) to expand educational opportunities for producers, agribusinesses, and communities; (4) to demonstrate and transfer research-based information to producers; (5) to provide a center where producers, business people and others can meet to address topics of common concern and build social connections. First involved are people in agriculture, North Dakota's primary economic base.

In North Dakota, 38% of the economic base is derived from agriculture. This is an extremely volatile base, dependent on weather, yields, and prices. According to the North Dakota Agricultural Statistics Service, net farm income per farm has bounced dramatically, from a high of $30,108 in 1992 to a low of $4,069 in 1997 (Figure 1).

While the nation's economy has enjoyed a tremendous upswing, the per capita income in North Dakota's non-metro areas has dropped 5.7%, from $19,461 in 1996 to $18,348 in 1997. The national per capita income for non-metro areas in 1996 was $18,705; in 1997, $19,090, a positive 2.1% change (USDA US Fact Sheet 1). Farmers and ranchers in North Dakota are being left out of the economic prosperity enjoyed by other businesses throughout the country.

Agriculture, like other businesses, needs to adapt to a new age, the information age. In **Understanding Agriculture's Transition into the 21st Century**, the authors write:

> Critical skills during this era will be collecting data from numerous sources, analyzing it, and using the information....it will be the people who know how to analyze data, interpret results, and make decisions based on the analysis who will succeed in an information-intensive era....
>
> Different production and marketing information and skills will be required. The challenge will be for individuals and firms to continuously assemble, apply, and control meaningful information. (Saxowsky and Duncan 9)

Gathering information and networking in the global marketplace are important to producers today. An example: a meat goat producer in Walcott, ND, is trying to increase the production and marketability of his product. With the technology proposed in this project, he could share ideas with other producers, and find worldwide markets for his product (Swenson).

The objectives of the FRC project are:

(1) to provide the connections and equipment for video conferencing and communications in four locations in North Dakota. Each site will be a community learning center, where groups can meet to access educational programs and resources. Additional equipment at NDSU will serve as the origination point for research-based information from specialists.

(2) to establish 15 risk management groups with membership of 10% of farm producers in each of the four counties.

(3) to increase the annual net income of each group member by $10,500, with a total project impact of $2,625,000.

The first step of the project is to create, empower and sustain agricultural risk management groups. Risk management is essential to the success of an individual farm or ranch, and to the sustenance of the state as a whole. Successful farmers learn to farm with confidence in a changing world by learning to deal with the risks that come with new opportunities. Risk management groups teach producers techniques and tools for decision making in their business. They learn to manage the five primary sources of risk: production, marketing, finance, legal, and human resources.

There are about 50 risk management groups in North Dakota now. Groups are made up of 10 to 20 producers who work together to increase their knowledge. They learn from each other's experience, the educational program, and simulated marketing strategies. Groups are facilitated by a risk management instructor who provides the educational program and interacts with the producers.

The FRC project will be the first to use video conferencing for interactive meetings and chat rooms and e-mail will enable producers to interact. The current suggested curriculum is included in the appendix. The curriculum will be adapted for online delivery methods by an online delivery system designer working with the curriculum specialist.

Technology-enhanced risk management groups will be piloted in four sites in North Dakota. The four sites are: Minot, Ward County; Langdon, Cavalier County; Hettinger, Adams County; and Crosby, Divide County (See site map). These sites have been selected because of their communities' interests and demand for technology-enhanced learning opportunities. Hettinger is a champion community.

As Figure 2 shows, the number of farms in each of these counties has decreased between 1987 and 1992. The trend continues. In 1999, North Dakota lost 500 farms, according to the North Dakota Agricultural Statistics Service. Risk management groups may help reverse this trend by increasing the income of individual farms and ranches through better risk management. The FRC project also will enable producers to find alternative opportunities for their farms or ranches, like different crops or animals.

The NDSU Extension Service works closely with many partners in determining the needs of people throughout the state. After gathering information from multicounty advisory groups, the State Board of Agricultural Research and Education, Census Data Center and agriculture statistics, Extension Director Sharon Anderson determined that, "although crop and livestock production issues are still critically important, producers need enhanced skills in marketing, risk management, business arrangements, globalization and labor issues. Many rural North Dakotans are seeking ways to increase their income and maintain their lifestyle by using technology to develop business opportunities."

The end users of the FRC project are farmers and ranchers seeking to improve their viability in agriculture. However, once the video conferencing equipment is in place, the potential for use goes far beyond risk management groups. The ability to reach people with health services, educational opportunities, and business connections is anticipated. Potential users include teachers, pharmacists and others who need to recertify their licenses, students can access online degree programs, and producers can participate in other educational programs. As the network in North Dakota grows, each of the FRC sites can serve as an origination point, along with NDSU, sending programs out further into the rural areas of the state.

Partners in this project include: NDSU Extension Service, North Dakota State Board of Vocational Education, North Dakota government, the four communities and counties involved, three Research Extension Centers, North Dakota Rural Rehabilitation Corp., rural electric and telephone cooperatives, and the North Dakota Association of Counties.

***Innovation*:** Farmers and ranchers have long gathered in the local coffee shop on a rainy day to discuss everything from the weather to politics. Comparing yields, prices and acreages is standard. But one drawback of this kind of networking is that, in any given area, they are producing the same commodity, marketing to the same location, and using the same information

resources. With this project, they will be able to network not only with their neighbor, but with other producers across the state, the region, and the world.

How other producers manage risk, what the worldwide marketplace demands and shopping for better financial opportunities are some of the benefits North Dakota farmers and ranchers can reap through this project. They can interact with producers worldwide to talk with them about alternative products. They will maintain their local networks, too, as they work together to make this technology work for them all.

The Extension Service has always provided educational programs, information and resources to people throughout the state. Doing so has always meant miles of driving and hours away from home or office for the producers. With this project, the Extension Service can provide better service to the most rural areas; it will be a faster, more cost-effective delivery system.

Up-to-date information and resources can be shared continually, without waiting for printing and mailing. The researcher or specialist will be available through technology, to answer questions, help analyze data, and provide person-to-person information. NDSU, as the land-grant university in North Dakota, is the home of the researchers and specialists whose work is central to this project. NDSU will be the primary originator of programs sent via video conferencing in this project. However, as the network grows, each of the four counties will be equipped to become originators, also.

Finally, this project is innovative in that it is expandable. What works to provide education and information to farmers and ranchers will also work for others. Educational opportunities and resources will be available to others once the network is in place. Teachers can take recertification classes, health professionals can receive updates, students of all ages can access educational resources--all without leaving their community, without driving hundreds of miles.

***Diffusion Potential:*** North Dakota is made of many small towns, farms, and ranches. This project is replicable throughout the state because of the commonality of the geographic obstacles. Further, the project is expandable because it will be built to connect and complement the state's technology backbone, the state's university system, and with service providers.

Because of its high potential for various end users, this project is replicable in other areas. The FRC project will demonstrate the value of bringing access to local communities. Bringing education and information into local communities is important to individuals whether they live on the prairies or in metropolitan areas. Wherever people want access without spending excessive hours and dollars to get there, this project has merit.

Dissemination of this project's goals and results will take place in many ways: through state and national Extension conferences and workshops, World Wide Web sites, articles in the Journal of Extension and other professional publications. Primary audiences interested in this project will include state and national Extension staff, producers, state government, Department of Commerce and community governments. The project director will address the overall project findings at the national conference and in written reports and journal articles. The project director and the risk management instructor will co-present at state extension conferences and workshops.

***Project Feasibility:*** North Dakota stands at a crossroads with the past in one direction and the future in the other. "North Dakota has long been a leader in the establishment of a single wide area network for state government and higher education. The North Dakota Information Network executive committee coordinates networking services between state government, higher education, K-12 school districts and county governments." (ND Information Technology Department II-6)

The North Dakota Information Network (NDIN) is in all four counties included in this proposal. The North Dakota Higher Education Network (HECN) connects the NDSU Extension Service with nine of the 11 higher education sites, including Minot State University in Ward County, via T1 Frame Relay connections. There are DS3 (45 Mbps) connections from Bismarck to Fargo and from Fargo to Grand Forks. The institutions that are connected via T1 Frame Relay have a committed information rate (CIR) on their link of half of a T1 or 768 kbps. (See NDIN and HECN system maps.) These systems connect the colleges and universities but the system is in almost constant use and does not provide much access to community citizens.

As technology has improved and expanded, the statewide network has not kept up. Plans for a new, state-of-the-art network are being developed. Development of the infrastructure is scheduled to start as early as August 2000.

At this point,

> State standards and policies have been developed for operating systems and platforms, applications development, office automation, data management, network services, security, document imaging, and video conferencing. These standards and policies will continue to be expanded and refined as technology changes. These standards will provide a guide to information technology decision-makers and reduce costs by providing consistency across state government (ND Information II-4).

This will reduce support costs, increase interoperability, and create economies of scale. (See Standards and Recommendations in the appendix.)

As the state's Information Technology Department collects Requests for Proposals toward the expansion and upgrading of the network, the FRC project will continue to work with them so that all systems are compatible. Therefore, what we propose today may be upgraded or changed to continue the interoperability offered through the state network and the higher education network.

The state Information Technology Department has identified more than 200 cities in which they plan to provide a broadband infrastructure. The Agriculture Communication director at NDSU has requested that “first wave” sites include three of the sites in this proposal: Hettinger, Adams County; Minot, Ward County; and Langdon, Cavalier County. The director will continue to work with the state’s technology department, the higher education network and NDSU administration until the project director position is filled.

So, the technology to carry the connections needed for this project is either available or planned. This project will also go “the last mile”--to community learning centers. The FRC project will provide the equipment to use video conferencing in a group setting at each of the four locations.

At all four sites, this project will provide the video conferencing equipment for small to large groups and help producers access the networks for chat rooms, e-mail and other available systems. Training producers and information providers to use the new technology is an essential part of this proposal and will be done by a technology trainer. Further information on each site is included in the appendix.

Since this proposal is interdependent with the statewide network and the state is in the process of upgrading the network, our project will work within the standards set by the state’s Information Technology Department, and within the recommendations of the North Dakota University System (NDUS), as indicated above. Final equipment needs may vary somewhat from the equipment identified in this proposal to maintain interoperability to build on the statewide network. North Dakota needs to have all systems working together to best serve its citizens.

To make the system work requires people. The Extension Service staff are professionals who work in a variety of specialties. Extension agents in the sites have experience with risk management groups and with providing educational programs for adults. The NDSU Agriculture Communication department will provide technical support, along with the specialist hired for this project. The credentials of specific staff are included in the appendices.

The FRC project will cover a three-year period, from September 1, 2000 through September 30, 2003. In the first year, the project will work closely with those designing and building the statewide network and local providers; NDSU specialists will begin to design and adapt the curriculum to an online delivery system. The second year’s work will include technology training, beginning evaluations, and program delivery. During the third year, programs and evaluations will continue. A project time line is included in the appendices.

NDSU is a land-grant university, with a long history of serving the people of North Dakota. The Extension Service is especially focused on outreach, taking education to people. This project provides a new delivery system, one that is faster, more cost effective, and more client driven. The Extension Service started working with technology in 1977 and is proactive in adopting new technology that can provide better service to people. The FRC project will be sustained through the statewide network (legislated mandate) and the Extension Service system.

***Community Involvement:*** The sites in the FRC project were selected because of their communities' demand for connectivity. People in Minot, Langdon and Hettinger have pushed forward this effort. For example, in Minot, the community has built the facility through fund raising and wired it to accept the proposed technology. In Langdon, community partners are ready to work with United Telephone in a room the company has offered for this use. In Hettinger, the medical community is leading the demand for connectivity. The sites vary in degrees of connectivity and facility availability. They share a need and desire to connect their residents with resources through technology.

Risk management education was identified as a need through multicounty program advisory groups, focus groups, and personal contacts between agents and producers. The advisory and focus groups included producers, youth, volunteers, business people and others.

Training to use the technology is an integral and ongoing part of this project. End user privacy will be protected through the established systems and policies of the Extension Service. Additional information about privacy issues will be addressed in the training sessions.

***Reducing Disparities:*** According to the Economic Research Service of the U.S. Department of Agriculture, the average age of a farm operator in North Dakota in 1997 was 51 years. The per capita income in 1997 was $18,348 for non-metro residents (USDA ND Fact Sheet 1). These figures are used to document the disparity of access in the following section. Figure 3 shows the national numbers for computer and Internet access based on these demographics.

According to **Falling Through the Net**, by the National Telecommunications and Information Administration, 40.2% of North Dakotans have a computer in their home. This is higher than nationally reported, but if we consider the income levels, the number of people with computers drops dramatically. At the $18,348 per capita income level noted above, only 22.1% of rural households have computer access (National 17). In the rural areas of North Dakota, because of the income level, probably fewer than 40.2% have computers.

In North Dakota as a whole, 20.6% have Internet access, but **Falling Through the Net** indicates that Internet access in rural areas, for our income range, drops to 8.4% (25). Again North Dakota rural areas probably have less Internet access than the state as a whole.

According to the U.S. Census Bureau for the four counties involved in this project, 73% of the people 25 years and above have graduated from high school and 13.86% have a college degree. National figures show that a higher education level indicates greater chance of having a computer; (33.2% of high school grads, 69.7% of college grads) and having Internet access (high school grads 15.5%, college grads, 47%) (22).

**Falling Through the Net** indicates that 52.8% of rural residents in our average age group of 51 years have a computer in their home and that 30.8% have Internet access (23, 28).

The barriers for the farmers and ranchers targeted by this project include finances, availability of high-speed, broadband services, distance, lack of technical support, and limited technology skills.

Here is how these barriers will be lowered.

Finances: With this grant, producers will gain access to technology at a center in their community. Lower-cost alternatives for access from their homes, via modems, web-TV, etc. will be explored.

Availability of High-speed, Broadband Services: As the state of North Dakota continues its plan to rebuild and update the statewide network, this project will complement the decisions they make for interoperability. Not all areas will be linked immediately. Our three-year project plan considers this. We are also working with the state to determine what areas receive priority in building the statewide network.

Our initial plan called for bringing video conferencing directly into producer homes. This is just not economically feasible at this time because of the costs of installing lines many miles. Nor could many producers afford the monthly service charges to maintain the service. By the time this project is finished, there will probably be satellite or other systems that can further connect producers with the community learning centers at each of these four sites, making the centers the point of origination for educational programs.

Distance: This entire project addresses the need to reduce the time and cost of travel. The FRC project will improve access to resources through the Internet. Meetings can be held through video conferencing, e-mail can provide quick access to NDSU specialists, and specialists and producers can reach each other without anyone traveling for hours.

Lack of Technical Support: Once someone purchases a computer, sets it up, and begins to use it, the countdown to the first problem begins. Sooner or later, the user will need help to fix something, or to learn to use a technique, or to keep them from putting the computer back into the box, never to be used again. In rural areas, there are not many people to whom producers can turn for help. Most communication vendors concentrate on more dense population areas. A technical support specialist will work with producers and the network system to address these problems.

Limited Technology Skills: The FRC project will teach farmers and ranchers in four counties to use technology and demonstrate the value of technology to the individual producer and their families. Face-to-face meetings will begin the training process. Additional support will use online technologies.

**Evaluation and Documentation:** The evaluation will seek to answer a variety of questions, including usage level of the technology-enhanced risk management groups by producers (data will be gathered from users and non-users). Data from users will include frequency of use, satisfaction with the technology, satisfaction with the information, financial benefits and actual uses of the information, and suggestions for improvement of the delivery method and the content. Data from non-users will be critical to provide insight into barriers to the use of this program.

Telephone interviews will be used for the evaluation method. The interviews will include open-ended (qualitative) and close-ended (quantitative) questions. The size of the participating group will determine the sample size. If the number of participants is about 200 or less, we will conduct a complete census of participants. If the number is larger, a sample will be drawn that would provide a margin of error of plus or minus 5% at the 95% confidence level. If feasible, one or two focus groups with producers will be conducted prior to the telephone survey. The focus group will provide background information for the telephone survey. The measurement instrument will be custom designed in cooperation with the developers of the technology-enhanced management groups. Likert scale questions and other structured items and contingency format questions will be used. The instrument will be developed after the curriculum has been designed and used. The time line suggests data gathering after March 1, 2001.

Qualitative data will be analyzed by way of thematic analysis and developing a coding scheme with tabulation of themes as appropriate. Quantitative data will be entered into SPSS and analyzed by way of frequency runs and relevant cross-tabulations. Percentages and means will be used as well as other appropriate statistics.

Daniel J. Klenow, Ph.D. will be the evaluator. His vitae is included in the appendix.